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ABSTRACT

Upon entry to New River Community College (NRCC), placement tests are administered to students enrolling in curricula and to students enrolling in English and mathematics classes. Based on preestablished cutoff scores on the placement tests, students are advised by counselors to take appropriate courses. In 1990, NRCC tracked students from developmental courses into the next logical course (non-developmental "target" course). Spring 1990 target course grades were compared based on students' prior developmental course work. The following results were obtained: (1) students passing the first developmental English course did as well in the second developmental English courses as did those students who did not take the first course; (2) overall, students who passed developmental English courses did better in the next non-developmental English course than students who had not taken the developmental English classes, although developmental students had a 9% higher rate of D's and F's than non-developmental students; (3) students passing the first developmental mathematics courses did almost as well in the second developmental mathematics courses as students who did not take the first developmental course; and (4) students who passed developmental mathematics courses did not do as well in the non-developmental mathematics target courses as did students who had not taken developmental mathematics. Detailed data tables of results are presented. (JMC)

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SUCCESS OF COMMUNITY COLLEGE STUDENTS COMPLETING DEVELOPMENTAL COURSES

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New River Community College

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SUCCESS OF COMMUNITY COLLEGE STUDENTS COMPLETING DEVELOPMENTAL COURSES

Upon entry to New River Community College (a comprehensive community college in Dublin, Virginia serving approximately 4,000 students), placement tests are administered to students enrolling in curriculums and to students who enroll in English and mathematics classes. These tests are used to measure the reading, English, and mathematics levels of the students. Cutoff scores have been pre-established by the faculty in these areas and students are advised by the counselors to take appropriate courses based upon scores obtained on the placement tests. If the scores are not adequate for "college level" courses, the students are advised to enroll in developmental English and/or mathematics courses

The following analyses deal with the tracking of students from developmental courses into the next logical course. A comparison of the grades earned in the next logical course is made for those students who took the developmental course and those students who did not take the developmental course (at least not at New River Community College).

On the next few pages are the results of the grades earned in the particular developmental courses ("object" courses) taken prior to Spring Semester 1990 and the subsequent grades earned in the next logical courses ("target" courses) that were taken Spring Semester 1990.

It should be pointed out that the data in all of the following tables represent the first enrollments for students in "target" courses for the particular disciplines involved. For example, in any

table involving an English "target" course taken Spring Semester 1990, the grades recorded in the table are for the first time that the student took that English "target" course at NRCC. If the student had taken that English "target" course prior to Spring Semester 1990 at NRCC, then that student and his/her grade were excluded from the table. In this manner, there should be a "pure" match between a developmental "object" grade and a grade earned in a corresponding "target" class.

The tables present the numbers and percentages of grades earned in the classes Spring Semester 1990 by the developmental "object" course grade earned prior to Spring Semester 1990 as well as the numbers and percentages of grades earned by students who did not take the developmental "object" course. Additionally, total frequencies and percentages are presented for all grades assigned in the courses.

For Spring Semester 1990, the following was observed (see Tables for summary results):

1. Students passing the first developmental English courses did as well in the second developmental English courses as did those students who did not take the first developmental English classes at NRCC (86% passing the second courses versus 83% passing, respectively).

2. Students who passed developmental English courses did better in the next non-developmental English courses than those students who had not taken the developmental English classes at NRCC (74% versus 66% with grades of at least a "C" in the non-developmental classes, respectively for the two groups). However, those taking developmental courses had a 9% higher rate of "D's" or "F's" in the next non-developmental classes than those students who had not taken the developmental courses.

3. Students passing the first developmental mathematics courses did almost as well in the second developmental mathematics courses as did those students who did not take the first developmental mathematics classes at NRCC (51% versus 53% passing the second developmental courses, respectively).

4. Students who passed developmental mathematics courses did not do as well in the next non-developmental mathematics courses as those students who had not taken developmental mathematics classes at NRCC (52% versus 64% with grades of at least a "C" in the next non-developmental courses, respectively for the two groups). Those students taking developmental courses had a 12% higher rate of "D's" or "F's" in the next non-developmental classes than did those students who had not taken the developmental courses.

Because many students who enroll in developmental courses in community colleges demonstrate very limited proficiency in English or mathematics skills, conventional wisdom among administrators and faculty is that these students will experience a higher failure rate than other students. This study, however, seems to indicate that students who complete developmental courses can succeed to the same degree as non-developmental students, at least within the structure of one institution. Such findings may be encouraging to community college educators who truly believe in the open door concept.

Table 1
DEVELOPMENTAL COURSE TRACKING -- ENGLISH SUMMARY RESULTS
Spring Semester 1990

A comparison of grades earned in developmental "target" English classes appears below for those students who passed a previous developmental English "object" class versus those students who did not take the developmental English "object" class:

Student Status for "Object" Course	Grade Earned in Developmental English "Target" Course				
	P	R	U	W	TOTAL
Students Passing Previous Developmental English "Object" Course:					
No.	38	2	1	3	44
Pct.	86	5	2	7	100
Students Not Taking Previous Developmental English "Object" Course at NRCC:					
No.	24	1	0	4	29
Pct.	83	3	0	14	100
TOTAL:					
No.	62	3	1	7	73
Pct.	85	4	1	10	100

Note: Abbreviations are as follows:
P = Pass
R = Repeat
U = Unsatisfactory
W = Withdrawal

Table 2

DEVELOPMENTAL COURSE TRACKING -- ENGLISH SUMMARY RESULTS

Spring Semester 1990

A comparison of grades earned in the next logical non-developmental "target" courses after the completion of developmental English "object" courses appears below for those students who passed a developmental English "object" class versus those students who did not take the developmental English "object" class at NRCC:

Student Status for "Object" Course	Grade Earned in the Next Logical Non-Developmental "Target" Course								
	A	B	C	D	F	I	W	X	TOTAL
Students Passing Previous Developmental English "Object" Course:									
No.	5	9	8	3	5	0	0	0	30
Pct.	17	30	27	10	17	0	0	0	100
Students Not Taking Previous Developmental English "Object" Course at NRCC:									
No.	43	57	22	7	26	3	27	0	185
Pct.	23	31	12	4	14	2	15	0	100
TOTAL:									
No.	48	66	30	10	31	3	27	0	215
Pct.	22	31	14	5	14	1	13	0	100

Table 3
DEVELOPMENTAL COURSE TRACKING -- MATHEMATICS SUMMARY RESULTS
Spring Semester 1990

A comparison of grades earned in developmental "target" mathematics classes appears below for those students who passed a previous developmental mathematics "object" class versus those students who did not take the developmental mathematics "object" class:

Student Status for "Object" Course	Grade Earned in Developmental Mathematics "Target" Course				
	P	U	W	X	TOTAL
Students Passing Previous Developmental Mathematics "Object" Course:					
No.	38	23	11	3	75
Pct.	51	31	15	4	100
Students Not Taking Previous Developmental Mathematics Course at NRCC:					
No.	40	24	11	0	75
Pct.	53	32	15	0	100
TOTAL:					
No.	78	47	22	3	150
Pct.	52	31	15	2	100

Table 4
DEVELOPMENTAL COURSE TRACKING -- MATHEMATICS SUMMARY RESULTS
Spring Semester 1990

A comparison of grades earned in the next logical non-developmental mathematics "target" courses after the completion of developmental mathematics "object" courses appears below for those students who passed a developmental mathematics "object" class versus those students who did not take the developmental mathematics "object" class at NRCC:

Student Status for "Object" Course	Grade Earned in the Next Logical Non-Developmental Mathematics "Target" Course								
	A	B	C	D	F	I	W	X	TOTAL
Students Passing Previous Developmental Mathematics: "Object" Course:									
No.	7	14	14	5	17	0	11	0	68
Pct.	10	21	21	7	25	0	16	0	100
Students Not Taking Previous Developmental Mathematics "Object" Course at NRCC:									
No.	26	49	36	20	16	0	25	2	174
Pct.	15	28	21	11	9	0	14	1	100
TOTAL:									
No.	33	63	50	25	33	0	36	2	242
Pct.	14	26	21	10	14	0	15	1	100

Table 5

COMPARISON OF STUDENT GRADES ASSIGNED IN **ENG 03** SPRING SEMESTER 1990
OF THOSE WHO TOOK ENG 01 PRIOR TO SPRING 1990
VERSUS THOSE
WHO DID NOT TAKE ENG 01

"Object" Course Grade		"Target" Course (ENG 03) Grade					Total Grades
		I	P	R	U	W	
ENG 01:							
P:	No.	0	36	2	1	3	42
	Pct.	0	86	5	2	7	100
R:	No.	0	1	0	0	0	1
	Pct.	0	100	0	0	0	100
S:	No.	0	1	0	0	0	1
	Pct.	0	100	0	0	0	100
Sub-Total:							
	No.	0	38	2	1	3	44
	Pct.	0	86	5	2	7	100
Did Not Take ENG 01:							
	No.	0	21	1	0	2	24
	Pct.	0	88	4	0	8	100
TOTAL:	No.	0	59	3	1	5	68
	Pct.	0	87	4	1	7	100

NOTE:
1. "ENG 01" denotes course, "Preparing for College Writing I."
2. "ENG 03" denotes course, "Preparing for College Writing II."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 6

COMPARISON OF STUDENT GRADES ASSIGNED IN **ENG 111** SPRING SEMESTER 1990

OF THOSE WHO TOOK ENG 03 PRIOR TO SPRING 1990

VERSUS THOSE

WHO DID NOT TAKE ENG 03

"Object" Course Grade		"Target" Course (ENG 111) Grade								Total Grades
		A	B	C	D	F	I	W	X	
ENG 03:										
P:	No.	3	9	5	1	4	0	0	0	22
	Pct.	14	41	23	5	18	0	0	0	100
Did Not Take ENG 03:										
	No.	24	32	17	5	17	0	16	0	111
	Pct.	22	29	15	5	15	0	14	0	100
TOTAL:	No.	27	41	22	6	21	0	16	0	133
	Pct.	20	31	17	5	16	0	12	0	100

NOTE:
1. "ENG 03" denotes course, "Preparing for College Writing II."
2. "ENG 111" denotes course, "College Composition I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 7

COMPARISON OF STUDENT GRADES ASSIGNED IN **ENG** 115 SPRING SEMESTER 1990

OF THOSE WHO TOOK ENG 03 PRIOR TO SPRING 1990

VERSUS THOSE

WHO DID NOT TAKE ENG 03

"Object" Course Grade		"Target" Course (ENG 115) Grade								Total Grades
		A	B	C	D	F	I	W	X	
ENG 03:										
P:	No.	2	0	2	2	1	0	0	0	7
	Pct.	29	0	29	29	14	0	0	0	100
Did Not Take ENG 03:										
	No.	10	11	4	1	7	1	7	0	41
	Pct.	24	27	10	2	17	2	17	0	100
TOTAL:	No.	12	11	6	3	8	1	7	0	48
	Pct.	25	23	13	6	17	2	15	0	100

NOTE:
1. "ENG 03" denotes course, "Preparing for College Writing II."
2. "ENG 115" denotes course, "Technical Writing."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 8

COMPARISON OF STUDENT GRADES ASSIGNED IN **ENG 05** SPRING SEMESTER 1990

OF THOSE WHO TOOK ENG 04 PRIOR TO SPRING 1990

VERSUS THOSE

WHO DID NOT TAKE ENG 04

"Object" Course Grade		"Target" Course (ENG 05) Grade					Total Grades
		I	P	R	U	W	
ENG 04:							
P:	No.	0	1	0	0	0	1
	Pct.	0	100	0	0	0	100
Did Not Take ENG 04:							
	No.	0	3	0	0	2	5
	Pct.	0	60	0	0	40	100
TOTAL:	No.	0	4	0	0	2	6
	Pct.	0	67	0	0	33	100

NOTE:
1. "ENG 04" denotes course, "Reading Improvement I."
2. "ENG 05" denotes course, "Reading Improvement II."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 9

COMPARISON OF STUDENT GRADES ASSIGNED IN **HIS 121** SPRING SEMESTER 1990

OF THOSE WHO TOOK ENG 05 PRIOR TO SPRING 1990

VERSUS THOSE

WHO DID NOT TAKE ENG 05

"Object" Course Grade	"Target" Course (HIS 121) Grade								Total Grades
	A	B	C	D	F	I	W	X	
ENG 05:	0	0	0	0	0	0	0	0	0
	-	-	-	-	-	-	-	-	-
Did Not Take ENG 05:									
No.	2	1	0	1	0	0	2	0	6
Pct.	33	17	0	17	0	0	33	0	100
TOTAL: No.	2	1	0	1	0	0	2	0	6
Pct.	33	17	0	17	0	0	33	0	100

NOTE:
1. "ENG 05" denotes course, "Reading Improvement II."
2. "HIS 121" denotes course, "United States History I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 10

COMPARISON OF STUDENT GRADES ASSIGNED IN **PSY 120** SPRING SEMESTER 1990

OF THOSE WHO TOOK ENG 05 PRIOR TO SPRING 1990

VERSUS THOSE

WHO DID NOT TAKE ENG 05

"Object" Course Grade		"Target" Course (PSY 120) Grade								Total Grades
		A	B	C	D	F	I	W	X	
ENG 05:										
P:	No.	0	0	1	0	0	0	0	0	1
	Pct.	0	0	100	0	0	0	0	0	100
U:	No.	0	1	0	0	0	0	0	0	1
	Pct.	0	100	0	0	0	0	0	0	100
Sub-Total:										
	No.	0	1	1	0	0	0	0	0	2
	Pct.	0	50	50	0	0	0	0	0	100
Did Not Take ENG 05:										
	No.	7	13	1	0	2	2	2	0	27
	Pct.	26	48	4	0	7	7	7	0	100
TOTAL:	No.	7	14	2	0	2	2	2	0	29
	Pct.	24	48	7	0	7	7	7	0	100

NOTE:
1. "ENG 05" denotes course, "Reading Improvement II."
2. "PSY 120" denotes course, "Human Relations."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 11

COMPARISON OF STUDENT GRADES ASSIGNED IN **BUS 121** SPRING SEMESTER 1990

OF THOSE WHO TOOK MTH 02 PRIOR TO SPRING 1990

VERSUS THOSE

WHO DID NOT TAKE MTH 02

"Object" Course Grade		"Target" Course (BUS 121) Grade								Total Grades
		A	B	C	D	F	I	W	X	
MTH 02:										
P:	No.	6	2	8	1	5	0	1	0	23
	Pct.	26	9	35	4	22	0	4	0	100
Did Not Take MTH 02:										
	No.	9	6	0	2	2	0	3	0	22
	Pct.	41	27	0	9	9	0	14	0	100
TOTAL:	No.	15	8	8	3	7	0	4	0	45
	Pct.	33	18	18	7	16	0	9	0	100

NOTE:
1. "BUS 121" denotes course, "Business Mathematics I."
2. "MTH 02" denotes course, "Basic Arithmetic."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 12

COMPARISON OF STUDENT GRADES ASSIGNED IN **MTH 03** SPRING SEMESTER 1990
OF THOSE WHO TOOK MTH 02 PRIOR TO SPRING 1990
VERSUS THOSE
WHO DID NOT TAKE MTH 02

"Object" Course Grade		"Target" Course (MTH 03) Grade					Total Grades
		I	P	U	W	X	
MTH 02:							
F:	No.	0	0	0	1	0	1
	Pct.	0	0	0	100	0	100
P:	No.	0	11	10	5	2	28
	Pct.	0	39	36	18	7	100
R:	No.	0	0	0	1	0	1
	Pct.	0	0	0	100	0	100
W:	No.	0	0	1	0	0	1
	Pct.	0	0	100	0	0	100
Sub-Total:							
	No.	0	11	11	7	2	31
	Pct.	0	35	35	23	6	100
Did Not Take MTH 02:							
	No.	0	29	12	11	0	52
	Pct.	0	56	23	21	0	100
TOTAL:	No.	0	40	23	18	2	83
	Pct.	0	48	28	22	2	100

NOTE:
1. "MTH 02" denotes course, "Basic Arithmetic."
2. "MTH 03" denotes course, "Basic Algebra I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 13
COMPARISON OF STUDENT GRADES ASSIGNED IN MTH 103 SPRING SEMESTER 1990
OF THOSE WHO TOOK MTH 02 PRIOR TO SPRING 1990
VERSUS THOSE
WHO DID NOT TAKE MTH 02

"Object" Course Grade		"Target" Course (MTH 103) Grade								Total Grades
		A	B	C	D	F	I	W	X	
MTH 02:										
P:	No.	0	3	2	0	6	0	4	0	15
	Pct.	0	20	13	0	40	0	27	0	100
R:	No.	0	0	0	0	1	0	0	0	1
	Pct.	0	0	0	0	100	0	0	0	100
Sub-Total:										
	No.	0	3	2	0	7	0	4	0	16
	Pct.	0	19	13	0	44	0	25	0	100
Did Not Take MTH 02:										
	No.	11	9	18	9	11	0	14	1	73
	Pct.	15	12	25	12	15	0	19	1	100
TOTAL:	No.	11	12	20	9	18	0	18	1	89
	Pct.	12	13	22	10	20	0	20	1	100

NOTE:
1. "MTH 02" denotes course, "Basic Arithmetic."
2. "MTH 103" denotes course, "Basic Technical Mathematics I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 14
COMPARISON OF STUDENT GRADES ASSIGNED IN MTH 04 SPRING SEMESTER 1990
OF THOSE WHO TOOK MTH 03 PRIOR TO SPRING 1990
VERSUS THOSE
WHO DID NOT TAKE MTH 03

"Object" Course Grade		"Target" Course (MTH 04) Grade					Total Grades
		I	P	U	W	X	
MTH 03:							
P:	No.	0	17	9	3	1	30
	Pct.	0	57	30	10	3	100
U:	No.	0	1	2	2	0	5
	Pct.	0	20	40	40	0	100
Sub-Total:							
	No.	0	18	11	5	1	35
	Pct.	0	51	31	14	3	100
Did Not Take MTH 03:							
	No.	0	9	8	0	0	17
	Pct.	0	53	47	0	0	100
TOTAL:	No.	0	27	19	5	1	52
	Pct.	0	52	37	10	2	100

NOTE:
1. "MTH 03" denotes course, "Basic Algebra I."
2. "MTH 04" denotes course, "Basic Algebra II."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 15
COMPARISON OF STUDENT GRADES ASSIGNED IN **MTH 06** SPRING SEMESTER 1990
OF THOSE WHO TOOK MTH 03 PRIOR TO SPRING 1990
VERSUS THOSE
WHO DID NOT TAKE MTH 03

"Object" Course Grade		"Target" Course (**MTH 06**) Grade					Total Grades
		I	P	U	W	X	
MTH 03:							
P:	No.	0	5	2	1	0	8
	Pct.	0	63	25	13	0	100
Did Not Take MTH 03:							
	No.	0	1	2	0	0	3
	Pct.	0	33	67	0	0	100
TOTAL:	No.	0	6	4	1	0	11
	Pct.	0	55	36	9	0	100

NOTE:
1. "MTH 03" denotes course, "Basic Algebra I."
2. "MTH 06" denotes course, "Basic Geometry."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 16

COMPARISON OF STUDENT GRADES ASSIGNED IN **MTH 111** SPRING SEMESTER 1990

OF THOSE WHO TOOK MTH 03 PRIOR TO SPRING 1990

VERSUS THOSE

WHO DID NOT TAKE MTH 03

"Object" Course Grade		"Target" Course (MTH 111) Grade								Total Grades
		A	B	C	D	F	I	W	X	
MTH 03:										
P:	No.	0	0	1	1	1	0	0	0	3
	Pct.	0	0	33	33	33	0	0	0	100
Did Not Take MTH 03:										
	No.	4	4	3	1	1	0	2	1	16
	Pct.	25	25	19	6	6	0	13	6	100
TOTAL:	No.	4	4	4	2	2	0	2	1	19
	Pct.	21	21	21	11	11	0	11	5	100

NOTE:
1. "MTH 03" denotes course, "Basic Algebra I."
2. "MTH 111" denotes course, "Technical Mathematics I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 17

COMPARISON OF STUDENT GRADES ASSIGNED IN **MTH 151** SPRING SEMESTER 1990

OF THOSE WHO TOOK MTH 03 PRIOR TO SPRING 1990

VERSUS THOSE

WHO DID NOT TAKE MTH 03

"Object" Course Grade		"Target" Course (**MTH 151**) Grade								Total Grades
		A	B	C	D	F	I	W	X	
MTH 03:										
P:	No.	1	2	1	1	2	0	0	0	7
	Pct.	14	29	14	14	29	0	0	0	100
W:	No.	0	0	0	0	0	0	1	0	1
	Pct.	0	0	0	0	0	0	100	0	100
Sub-Total:										
	No.	1	2	1	1	2	0	1	0	8
	Pct.	13	25	13	13	25	0	13	0	100
Did Not Take MTH 03:										
	No.	0	8	3	2	0	0	0	0	13
	Pct.	0	62	23	15	0	0	0	0	100
TOTAL:	No.	1	10	4	3	2	0	1	0	21
	Pct.	5	48	19	14	10	0	5	0	100

NOTE:
1. "MTH 03" denotes course, "Basic Algebra I."
2. "MTH 151" denotes course, "Mathematics for the Liberal Arts I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 18

COMPARISON OF STUDENT GRADES ASSIGNED IN **MTH 06** SPRING SEMESTER 1990

OF THOSE WHO TOOK MTH 04 PRIOR TO SPRING 1990

VERSUS THOSE

WHO DID NOT TAKE MTH 04

"Object" Course Grade		"Target" Course (MTH 06) Grade					Total Grades
		I	P	U	W	X	
MTH 04:							
P:	No.	1	5	2	2	0	10
	Pct.	10	50	20	20	0	100
U:	No.	0	4	1	0	0	5
	Pct.	0	80	20	0	0	100
Sub-Total:							
	No.	1	9	3	2	0	15
	Pct.	7	60	20	13	0	100
Did Not Take MTH 04:							
	No.	0	1	2	0	0	3
	Pct.	0	33	67	0	0	100
TOTAL:	No.	1	10	5	2	0	18
	Pct.	6	56	28	11	0	100

NOTE:
1. "MTH 04" denotes course, "Basic Algebra II."
2. "MTH 06" denotes course, "Basic Geometry."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 19

COMPARISON OF STUDENT GRADES ASSIGNED IN MTH 151 SPRING SEMESTER 1990
OF THOSE WHO TOOK MTH 04 PRIOR TO SPRING 1990
VERSUS THOSE
WHO DID NOT TAKE MTH 04

"Object" Course Grade		"Target" Course (MTH 151) Grade								Total Grades
		A	B	C	D	F	I	W	X	
MTH 04:										
P:	No.	0	3	1	0	0	0	1	0	5
	Pct.	0	60	20	0	0	0	20	0	100
U:	No.	0	1	0	0	2	0	2	0	5
	Pct.	0	20	0	0	40	0	40	0	100
W:	No.	0	0	0	0	0	0	1	0	1
	Pct.	0	0	0	0	0	0	100	0	100
Sub-Total:										
	No.	0	4	1	0	2	0	4	0	11
	Pct.	0	36	9	0	18	0	36	0	100
Did Not Take MTH 04:										
	No.	0	8	3	2	0	0	0	0	13
	Pct.	0	62	23	15	0	0	0	0	100
TOTAL:	No.	0	12	4	2	2	0	4	0	24
	Pct.	0	50	17	8	8	0	17	0	100

NOTE:
1. "MTH 04" denotes course, "Basic Algebra II."
2. "MTH 151" denotes course, "Mathematics for the Liberal Arts I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 20
COMPARISON OF STUDENT GRADES ASSIGNED IN MTH 171 SPRING SEMESTER 1990
OF THOSE WHO TOOK MTH 04 PRIOR TO SPRING 1990
VERSUS THOSE
WHO DID NOT TAKE MTH 04

"Object" Course Grade		"Target" Course (MTH 171) Grade								Total Grades
		A	B	C	D	F	I	W	X	
MTH 04:										
P:	No.	0	3	0	2	3	0	3	0	11
	Pct.	0	27	0	18	27	0	27	0	100
Did Not Take MTH 04:										
	No.	1	3	3	1	1	0	3	0	12
	Pct.	8	25	25	8	8	0	25	0	100
TOTAL:	No.	1	6	3	3	4	0	6	0	23
	Pct.	4	26	13	13	17	0	26	0	100

NOTE:
1. "MTH 04" denotes course, "Basic Algebra II."
2. "MTH 171" denotes course, "Pre-Calculus Mathematics I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 21
COMPARISON OF STUDENT GRADES ASSIGNED IN MTH 151 SPRING SEMESTER 1990
OF THOSE WHO TOOK MTH 06 PRIOR TO SPRING 1990
VERSUS THOSE
WHO DID NOT TAKE MTH 06

"Object" Course Grade		"Target" Course (MTH 151) Grade								Total Grades
		A	B	C	D	F	I	W	X	
MTH 06:										
	No.	0	0	0	0	0	0	0	0	0
	Pct.	-	-	-	-	-	-	-	-	-
Did Not Take MTH 06:										
	No.	0	8	3	2	0	0	0	0	13
	Pct.	0	62	23	15	0	0	0	0	100
TOTAL:	No.	0	8	3	2	0	0	0	0	13
	Pct.	0	62	23	15	0	0	0	0	100

NOTE:
1. "MTH 06" denotes course, "Basic Geometry."
2. "MTH 151" denotes course, "Mathematics for the Liberal Arts I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

Table 22

COMPARISON OF STUDENT GRADES ASSIGNED IN MTH 171 SPRING SEMESTER 1990
OF THOSE WHO TOOK MTH 06 PRIOR TO SPRING 1990
VERSUS THOSE
WHO DID NOT TAKE MTH 06

"Object" Course Grade		"Target" Course (MTH 171) Grade								Total Grades
		A	B	C	D	F	I	W	X	
MTH 06:										
P:	No.	0	1	1	0	0	0	2	0	4
	Pct.	0	25	25	0	0	0	50	0	100
Did Not Take MTH 06:										
	No.	1	3	3	1	1	0	3	0	12
	Pct.	8	25	25	8	8	0	25	0	100
TOTAL:	No.	1	4	4	1	1	0	5	0	16
	Pct.	6	25	25	6	6	0	31	0	100

NOTE:
1. "MTH 06" denotes course, "Basic Geometry."
2. "MTH 171" denotes course, "Pre-Calculus Mathematics I."
3. "Object" grades were earned prior to Spring Semester 1990.
4. "Target" grades were earned Spring Semester 1990.
5. No other enrollments in the "object" or "target" disciplines occurred between the enrollments in the "object" and "target" courses.

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